

FORM PTO-1449 INFORMATION DISCLOSURE STATEMENT	ATTY. DOCKET NO. SP018.C4	APPLICATION NO. 09/188,708
APPLICANT Garg et al.		
FILING DATE November 10, 1998		GROUP 2783

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	FILING DATE
	AA1	4,212,076	07/1980	Conners	364	706
	AB1	5,125,092	06/1992	Prener	395	725
	AC1	5,201,056	04/1993	Daniel et al.	395	800
	AD1	5,241,636	08/1993	Kohn	395	375
	AE1	5,487,156	01/1996	Popescu et al.	395	375
	AF1	5,493,687	02/1996	Garg et al.	395	800.23
	AG1	5,560,035	09/1996	Garg et al.	395	800.23
	AH1	5,682,546	10/1997	Garg et al.	395	800.23
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FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB-CLASS	TRANSLATION
	AL1	0 170 284	02/1986	EP		Yes No
	AM1	0 213 843	03/1987	EP		Yes No
	AN1	0 241 909	10/1987	EP		Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

	AR	1	Patterson et al., "A VLSI RISC," <i>IEEE Computer</i> , vol. 15, no. 9, pp. 8-18, September 1982.
	AS	1	Maejima et al., "A 16-bit Microprocessor with Multi-Register Bank Architecture," <i>Proc. Fall Joint Computer Conference</i> , Nov. 2-6, 1986, pp. 1014-1019.
	AT	1	Birman et al., "Design of a High-Speed Arithmetic Datapath," <i>IEEE</i> , pp. 214-216, 1988.
	AU	1	Ruby B. Lee, "Precision Architecture," <i>IEEE Computer</i> , pp. 78-91, January 1989..

EXAMINER LARRY D. DONAGHUE PRIMARY EXAMINER	DATE CONSIDERED 11/16/99
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FORM PTO-1449 INFORMATION DISCLOSURE STATEMENT	ATTY. DOCKET NO. SP018.C6	APPLICATION NO. 09/188,708
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EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	FILING DATE
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EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB-CLASS	TRANSLATION
	AL2	0 454 636	10/1991	EP			Yes No
	AM2	2 190 521	11/1987	GB			Yes No
	AN						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)			
	AR	2	Molnar et al., "Floating-Point Processors," <i>IEEE Intl. Solid-State Circuits Conf.</i> , pp. 48-49, plus Figure 1, Feb. 1989.
	AS	2	Steven et al., "Harp: A Parallel Pipelined RISC Processor," <i>Microprocessors and Microsystems</i> , vol. 13, no. 9, pp. 579-586, Nov. 1989.
	AT	2	Groves et al., "An IBM Second Generation RISC Processor Architecture," <i>35th IEEE Computer Society International Conference</i> , Feb. 26, 1990, pp. 166-172.
	AU	2	Miller et al., "Exploiting Large Register Sets," <i>Microprocessors and Microsystems</i> , vol. 14, no. 6, July 1990, pp. 333-340.

EXAMINER	LARRY D. DONAGHUE PRIMARY EXAMINER	DATE CONSIDERED	11/16/99
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AL						Yes No
AM						Yes No
AN						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

	✓ AR	3	Adams et al., "Utilizing Low Level Parallelism in General Purpose Code: The HARP Project," <i>Microprocessing and Microprogramming</i> , vol. 29, no. 3, Oct. 1990, pp. 137-149.
	AS	3	Daryl Odnert et al., "Architecture and Computer Enhancements for PA-RISC Workstations," <i>Proc. from IEEE Comcon</i> , San Francisco, CA, pp. 214-218, feb. 1991.
	AT	3	Colin Hunter, "Series 3200 Programmer's Reference Manual," Prentice-Hall Inc., Englewood Cliffs, NJ, 1987, pp. 2-4, 2-21, 2-23, 6-14, and 6-126.
	AU		

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EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	FILING DATE
<i>J</i>	AA4	4,626,989	12/1986	Torii	364	200
	AB4	4,675,806	06/1987	Uchida	364	200
	AC4	4,722,049	01/1988	Lahti	364	200
	AD4	4,807,115	02/1989	Torng	364	200
	AE4	5,226,126	07/1993	McFarland et al.	395	375
	AF4	5,230,068	07/1993	Van Dyke et al.	395	375
	AG4	5,442,757	08/1995	McFarland et al.	395	375
	AH4	5,487,156	01/1996	Popescu et al.	395	375
	AI4	5,561,776	10/1996	Popescu et al.	395	375
	AJ4	5,592,636	01/1997	Popescu et al.	395	586
<i>K</i>	AK4	5,625,837	04/1997	Popescu et al.	395	800

FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB-CLASS	TRANSLATION
	AL					Yes No
	AH					Yes No
	AN					Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

<i>J</i>	✓ AR	4	Smith et al., "Implementation of Precise Interrupts in Pipelined Processors," <i>Proceedings of the 12th Annual International Symposium on Computer Architecture</i> , June 1985, pp. 36-44.
<i>el</i>	✓ AS	4	Wedig, R.G., <u>Detection of Concurrency in Directly Executed Language Instruction Streams</u> , (Dissertation), June 1982, pp. 1-179.
<i>U</i>	✓ AT	4	Agerwala et al., "High Performance Reduced Instruction Set Processors," IBM Research Division, March 31, 1987, pp. 1-61.
<i>O</i>	✓ AU	4	Gross et al., "Optimizing Delayed Branches," <i>Proceedings of the 5th Annual Workshop on Microprogramming</i> , October 5-7, 1982, pp. 114-120.

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EXAMINER INITIAL	CLASS	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	FILING DATE
<i>J</i>		5,627,983	05/1997	Popescu et al.	395	393	
		5,708,841	01/1998	Popescu et al.	355	800	
		5,768,575	06/1998	McFarland et al.	395	569	
		5,797,025	08/1998	Popescu et al.	395	800	
		5,832,293	11/1998	Popescu et al.	395	800.23	08/1997
<i>N</i>		5,838,986	11/1998	Garg et al.	395	800.23	09/1997
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		AL					Yes No
		AM					Yes No
		AN					Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

<i>lp</i>	AR	Σ	✓	Tjaden et al., "Representation of Concurrency with Ordering Matrices," <i>IEEE Trans. On Computers</i> , Vol. C-22, No. 8, August 1973, pp. 752-761.
<i>AS</i>	AS	Σ	✓	Tjaden, <u>Representation and Detection of Concurrency Using Ordering Matrices</u> , (Dissertation), 1972, pp. 1-199.
<i>AT</i>	AT	Σ	✓	Foster et al., "Percolation of Code to Enhance Parallel Dispatching and Execution," <i>IEEE Trans. On Computers</i> , December 1971, pp. 1411-1415.
<i>AU</i>	AU	Σ	✓	Thornton, J.E., <u>Design of a Computer: The Control Data 6600</u> , Control Data Corporation, 1970, pp. 58-140.

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	AL						Yes No
	AM						Yes No
	AN						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

	AR	6	✓	Weiss et al., "Instruction Issue Logic in Pipelined Supercomputers," Reprinted from <i>IEEE Trans. on Computers</i> , Vol. C-33, No. 11, November 1984, pp. 1013-1022.
	AS	6	✓	Tomasulo, R.H., "An Efficient Algorithm for Exploiting Multiple Arithmetic Units," <i>IBM Journal</i> , Vol. 11, January 1967, pp. 25-33.
	AT	6	✓	Tjaden et al., "Detection and Parallel Execution of Independent Instructions," <i>IEEE Trans. On Computers</i> , Vol. C-19, No. 10, October 1970, pp. 889-895.
	AU	6	✓	Smith et al., "Limits on Multiple Instruction Issue," <i>Proceedings of the 3rd International Conference on Architectural Support for Programming Languages and Operating Systems</i> , April 1989, pp. 290-302.

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	AL					Yes No
	AM					Yes No
	AN					Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

	AR	✓ Z	Pleszkun et al., "The Performance Potential of Multiple Functional Unit Processors," <i>Proceedings of the 15th Annual Symposium on Computer Architecture</i> , June 1988, pp. 37-44.
	AS	✓ Z	Pleszkun et al., "WISQ: A Restartable Architecture Using Queues," <i>Proceedings of the 14th International Symposium on Computer Architecture</i> , June 1987, pp. 290-299.
	AT	✓ Z	Patt et al., "Critical Issues Regarding HPS, A High Performance Microarchitecture," <i>Proceedings of the 18th Annual Workshop on Microprogramming</i> , December 1985, pp. 109-116.
	AU	✓ Z	Hwu et al., "Checkpoint Repair for High-Performance Out-of-Order Execution Machines," <i>IEEE Trans. On Computers</i> , Vol. C-36, No. 12, December 1987, pp. 1496-1514.





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OTHER (Including Author, Title, Date, Pertinent Pages, etc.)							
	AR	✓	B	Patt et al., "HPS, A New Microarchitecture: Rationale and Introduction," <i>Proceedings of the 18th Annual Workshop on Microprogramming</i> , December 1985, pp. 103-108.			
	AS	✓	B	Keller, R.M., "Look-Ahead Processors," <i>Computing Surveys</i> , Vol. 7, No. 4, December 1975, pp. 177-195.			
	AT	✓	B	Jouppi et al., "Available Instruction-Level Parallelism for Superscalar and Superpipelined Machines," <i>Proceedings of the 3rd International Conference on Architectural Support for Programming Languages and Operating Systems</i> , April 1989, pp. 272-282.			
	AU	✓	B	Hwu et al., "HPSm, a High Performance Restricted Data Flow Architecture Having Minimal Functionality," <i>Proceedings from ISCA-13</i> , Tokyo, Japan, June 2-5, 1986, pp. 297-306.			





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	AL						Yes No
	AM						Yes No
	AN						Yes No




OTHER (Including Author, Title, Date, Pertinent Pages, etc.)							
	✓	AR	2	Hwu et al., "Exploiting Parallel Microprocessor Microarchitectures with a Compiler Code Generator," <i>Proceedings of the 15th Annual Symposium on Computer Architecture</i> , June 1988, pp. 45-53.			
	✓	AS	2	Colwell et al., "A VLIW Architecture for a Trace Scheduling Compiler," <i>Proceedings of the 2nd International Conference on Architectural Support for Programming Languages and Operating Systems</i> , October 1987, pp. 180-192.			
	✓	AT	2	Uht, A.K., "An Efficient Hardware Algorithm to Extract Concurrency From General-Purpose Code," <i>Proceedings of the 19th Annual Hawaii International Conference on System Sciences</i> , 1986, pp. 41-50.			
	✓	AU	2	Charlesworth, A.E., "An Approach to Scientific Array Processing: The Architectural Design of the AP-120B/FPS-164 Family," <i>Computer</i> , Vol. 14, September 1981, pp. 18-27.			

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EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB-CLASS	TRANSLATION
AL							Yes No
AM							Yes No
AN							Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)			
	AR	✓ 10	Acosta, Ramón D. et al., "An Instruction Issuing Approach to Enhancing Performance in Multiple Functional Unit Processors," <i>IEEE Transactions On Computers</i> , Vol. C-35, No. 9, September 1986, pp. 815-828.
	AS	✓ 10	Johnson, William M., <u>Super-Scalar Processor Design</u> , (Dissertation), Copyright 1989, 134 pages.
	AT	✓ 10	Sohi, Gurindar S. and SriRam Vajapeyam, "Instruction Issue Logic For High-Performance, Interruptable Pipelined Processors," <i>Conference Proceedings of the 14th Annual International Symposium on Computer Architecture</i> , June 2-5, 1987, pp. 27-34.
	AU		

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AL						Yes No
AM						Yes No
AN						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

	AR	11	Smith, M.D. et al., "Boosting Beyond Static Scheduling in a Superscalar Processor," <i>IEEE</i> , 1990, pp. 344-354.
	AS	11	Murakami, K. et al., "SIMP (Single Instruction stream/Multiple instruction Pipelining): A Novel High-Speed Single-Processor Architecture," <i>ACM</i> , 1989, pp. 78-85.
	AT	11	Jouppi, N.P., "The Nonuniform Distribution of Instruction-Level and Machine Parallelism and Its Effect on Performance," <i>IEEE Transactions on Computers</i> , Vol. 38, No. 12, December 1989, pp. 1645-1658.
	AU	11	Horst, R.W. et al., "Multiple Instruction Issue in the NonStop Cyclone Processor," <i>IEEE</i> , 1990, pp. 216-226.

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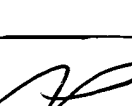
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AL						Yes No
AM						Yes No
AN						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

	AR	12	Goodman, J.R. and Hsu, W., "Code Scheduling and Register Allocation in Large Basic Blocks," <i>ACM</i> , 1988, pp. 442-452.
	AS	12	Lam, M.S., "Instruction Scheduling For Superscalar Architectures," <i>Annu. Rev. Comput. Sci.</i> , Vol. 4, 1990, pp. 173-201.
	AT	12	Aiken, A. and Nicolau, A., "Perfect Pipelining: A New Loop Parallelization Technique*," pp. 221-235.
	AU	12	Jouppi, N.H., "Integration and Packaging Plateaus of Processor Performance," <i>IEEE</i> , 1989, pp. 229-232.

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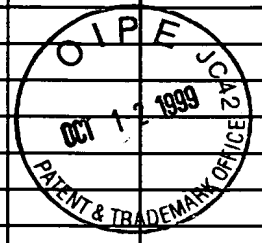
AR	13	Groves, R.D. and Oehler, R., "An IBM Second Generation RISC Processor Architecture," <i>IEEE</i> , 1989, pp. 134-137.
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AL1							Yes No
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OTHER (Including Author, Title, Date, Pertinent Pages, etc.)			
<i>LD</i>	AR	1	IBM Journal of Research and Development, Vol. 34, No. 1, January 1990, pp. 1-70.
	AS	1	
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EXAMINER LARRY D. DONAGHUE PRIMARY EXAMINER	DATE CONSIDERED 11/16/99
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EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.